(c) whether it is also a fact that India has signed a contract with the International Sea Bed Authority for undertaking the work for exploration of poly-metallic nodules; and

(d) if so, details thereof?

THE MINISTER OF STATE OF THE DEPARTMENT OF OCEAN DEVELOPMENT (SHRI KAPIL SIBAL): (a) Yes, Sir.

(b) A semi-continuous pilot plant has been set up at Hindustan Zinc Limited, Udaipur to validate a process for extraction of metals *viz.* Copper, Nickel and Cobalt from polymetallic nodules. The metal extraction technology developed is cost effective when the metal content of Copper, Nickel and Cobalt is 2% by weight in the nodule.

(c) Yes, Sir.

(d) As per the United Nations Convention on the Law of the Sea, India has signed a 15-year contract with the International Sea Bed Authority for undertaking various developmental work pertaining to poly-metallic nodules. Under the contract, Department of Ocean Development is pursuing survey and exploration, comprehensive environmental impact assessment study in the area in Central Indian Ocean Basin, and development of technology for mining of polymetallic nodules from deep sea. Department has already developed a technology for extraction of metals—Copper, Nickel and Cobalt from these nodules.

Third Station in Antarctica

1528. SHRI EKANATH K. THAKUR: Will the Minister of OCEAN DEVELOPMENT be pleased to state:

(a) whether it is a fact that India is planning to set up its third station in Antarctica;

(b) if so, the location of the new site and the estimated cost of the new station; and

(c) the amount of money spent by Government for the upkeep of previous stations?

THE MINISTER OF STATE OF THE DEPARTMENT OF OCEAN DEVELOPMENT (SHRI KAPIL SIBAL): (a) Yes, Sir. It is a fact that india is planning to set up its third station in Antarctica.

(b) The location of the new site as proposed after preliminary survey carried out during XXIII Indian Antarctic Expedition in early 2004 is near latitude 69° South and longitude 76° East. The department is still in the initial stages of survey of the selected site which is required to be assessed for environmental parameters as mandated under the Environmental Protocol of the Antarctic-Treaty, and also for logistics and scientific considerations. So, the estimated cost cannot be worked out at this stage.

(c) The expenditure for the maintenance and upkeep of research stations in antarctica from 1983-84 to 2003-04 is Rs. 75.00 crores and the persent annual expenditure is about Rs. 4.00 crores.

Opening of National Ice Core Laboratory

1529. SHRI EKANATH K. THAKUR: Will the Minister of OCEAN DEVELOPMENT be pleased to state:

(a) whether it is a fact that the National Centre for Antarctic and Ocean Research (NCAOR), Goa, is all set to open the state-of-the art National Ice Core Laboratory, the first of its kind in South Asia in its campus; and

(b) if so, the opportunities that would be made available to the Indian scientists due to this facility?

THE MINISTER OF STATE OF THE DEPARTMENT OF OCEAN DEVELOPMENT (SHRI KAPIL SIBAL): (a) Yes Sir. The Department, at its National Centre for Antarctic and Ocean Research (NCAOR), Goa is in the process of establishing a National Ice Core Laboratory.

(b) This laboratory will provide state of the art facility for archiving and processing of ice core samples obtained from Antarctica and other places, in specialized cold rooms where temperatures will be maintained at minus Twenty degree Celsius. This laboratory is being equipped with special instruments, such as laser-guided precision band saw machine for cutting ice core samples. Inductively coupled Plasma Mass Spectrometer, for conducting ultra-trace elemental studies in ice, water, sediments and rocks. Ion Chromatography, Stable Isotope Ratio Mass Spectrometer (IRMS) for carrying out high sensitivity analysis of the staple isotopes of Hydrogen, Oxygen, Carbon and Nitrogen, both in ice and sediments. A sophisticated scanning electron Microscope along with micro-chemical analyzer system is also being installed at this facility.